Friends or Foes: Social Anxiety, Peer Affiliation, and Drinking in Middle School*

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ABSTRACT: Objective: The relation between social anxiety and alcohol consumption suggests aspects of both risk and protection, but most research has focused on late adolescents and emerging adults. **Method:** We investigated the synergistic impact of social anxiety, a need for affiliation with others, and perceived peer alcohol use on drinking in a sample of more than 1,500 early adolescents from southern California (48% girls). Via school-wide surveys, middle school students completed the Social Anxiety Scale for Children–Revised, a modified version of the Interpersonal Orientation Scale, as well as measures of perceived peer drinking and self-reported lifetime and current drinking. **Results:** For

socially anxious youths, high levels of perceived peer use in conjunction with high levels of affiliation need was associated with greater alcohol use on average and more frequent episodic drinking. Specific to heavy episodic drinking, the interaction of social anxiety and perceived peer drinking seemed to affect girls and boys differentially. Sex differences emerged for the moderation of social anxiety's influence on drinking initiation by perceived peer influence. **Conclusions:** These findings suggest that alcohol-related risks associated with social anxiety might be gender specific and more important in earlier stages of alcohol use than previously believed. (*J. Stud. Alcohol Drugs*, 72, 61-69, 2011)

THE TRANSITION BETWEEN LATE CHILDHOOD and early adolescence is marked by critical biological, physical, and psychological changes. Early adolescents experience the changes of puberty concurrent with significant shifts from the primary influence of familial relationships to more peer-focused interaction. The expansion of the adolescent social milieu and greater independence from parents exposes youths to a variety of new social roles and behavioral choices (Windle et al., 2008). As such, the transition from childhood to adolescence is seen as an essential component in understanding later adolescent alcohol use and attitudes toward alcohol consumption (Schell et al., 2005).

Alcohol use can begin as early as elementary school (Anderson et al., 2005; Windle et al., 2008), with 9.8% of fourth graders, 16.1% of fifth graders, and 29.4% of sixth graders endorsing lifetime use (Donovan, 2007). In one study, 32.1% of students in seventh and eighth grade reported consuming a standard drink of alcohol at least once in their lifetime (Anderson and Brown, in press). In the Monitoring the

Future Study (Johnston et al., 2008), 39% of eighth graders reported lifetime alcohol use, with 18% drinking to intoxication. Although just 16% consumed alcohol in the past month, 9.5% endorsed heavy episodic use within the past 2 weeks (Johnston et al., 2008), with 61.1% of those having done so more than one time (Patrick and Schulenberg, 2010). Evidence linking age at first use to the development of problematic alcohol use has encouraged research on the emergence of drinking-related behaviors and attitudes in childhood (Dubow et al., 2008; Maggs et al., 2008; Zucker, 2008; Zucker et al., 2009). Findings suggest the earlier the age at first use, the greater the risk for development of subsequent problem drinking. As such, identifying risk factors associated with early initiation and progression to problematic drinking in early adolescence is of paramount importance.

Although the link between externalizing behavior in early adolescence and alcohol use has been thoroughly established (Anderson et al., 2005; King et al., 2004; Sartor et al., 2006), research exploring the link between internalizing pathways and drinking-related behavior has had mixed results (Maggs et al., 2008; Morris et al., 2005; Pardini et al., 2007; Stice et al., 1998). Some research suggests strong associations between social anxiety and alcohol use in both adolescents and adults (Buckner et al., 2006; Burke and Stephens, 1999; Stewart et al., 2006). In these studies, social anxiety is seen as a risk factor for the development of problematic alcohol use. The Tension Reduction Hypothesis (Conger, 1956; Kushner et al., 1990), the Stress Response Dampening Model (Sher and Levenson, 1982), and the Self-Medication Hypothesis (Carrigan and Randall, 2003; Khantzian, 1985) support the fundamental assumption that social anxiety predicts alcohol use and alcohol-related problems. However, a

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number of studies support a negative relationship between social anxiety and alcohol/drug use (e.g., Eggleston et al., 2004; Fergusson and Horwood, 1999; Ham and Hope, 2005; Shedler and Block, 1990). Fergusson and Horwood (1999) found that children at the highest decile of anxious and withdrawn symptoms at age 10 years were less likely to associate with peers who used alcohol and drugs at age 15, compared with less anxious/less withdrawn children. Similarly, a longitudinal study by Shedler and Block (1990) found that 18-year-olds who had never tried drugs (alcohol was not assessed) were overcontrolled, anxious, and not socially at ease. At age 11 years, these same youths were described as anxious, inhibited, and shy. Placed in this light, social anxiety may be seen as a protective mechanism against, rather than a risk factor for, the development of problematic drinking behaviors.

Given the developmental shift toward a larger role for peers in adolescent relationships, social influence has been a consistent focus of investigations of youth drinking (Anderson and Brown, *in press*). Peers have the potential to be either positive or negative influences on behavior, depending on the behaviors endorsed by the peer group (Brown et al., 2008a). Commonly, heavy drinking among peers, or the perception of heavy drinking, is associated with increased consumption in young adolescents (Anderson and Brown, *in press*; McIntosh et al., 2006). Youths between 10 and 14 years of age may be especially vulnerable to peer influence as they are beginning the process of familial autonomy but have not yet developed a sound sense of personal identity (Steinberg and Monahan, 2007). Steinberg and Monahan (2007) explored developmental differences in resistance to peer influence among individuals 11-30 years of age. Resistance to peer influence differed as a function of age, with individuals between 14 and 18 years of age demonstrating a significant increase in resistance to peer influence. Resistance to peer influence was stable for preteens and young adolescents (10-14 years) and young adults (18-30 years). The ability to resist peer influence is seemingly a developmental process beginning when early adolescents seek to become independent from the family and develop a new dependence on friends (Steinberg, 1990). Buckner and Turner (2009) examined the relation between social anxiety and the emergence of problematic alcohol use in late adolescence and emerging adulthood. The authors found familial support to be a major factor in the development of alcohol use disorders in young women with social anxiety disorder. They suggested that peer influence plays a limited role in the emergence of alcohol use disorders among women with social anxiety disorder until after the onset of an alcohol use disorder or the initiation of risky drinking practices. It is an empirical question whether similar relations would hold earlier in development, before the onset of pathological drinking.

A promising avenue to explore in clarifying the relationship between social anxiety and drinking is that of affiliation

motivation. Hill (1987) suggested that affiliation motivation is composed of four key social rewards: positive affect resulting from affirmative interpersonal interactions, attention, social comparison, and emotional support. Depending on both the individual and situational factors, Hill proposed that some social rewards are valued more than others. Although some individuals strongly desire social affiliation, they might struggle to achieve the desired result, as in the case of youths with social anxiety. Failing to achieve a desired social outcome may encourage socially anxious youths to adopt risky strategies consistent with perceived drinking norms in order to facilitate more successful social interactions (Epstein et al., 2008). Consequently, drinking to alleviate anxiety and promote rewarding social interactions via better emotional support or improved social status may become negatively reinforcing (Stewart et al., 2001), thus leaving the socially anxious adolescent vulnerable to increasingly problematic alcohol use in the future (Cable and Sacker, 2007; Carrigan and Randall, 2003). However, little, if any, research has considered affiliation motivation as a moderator of the relation between social anxiety and alcohol use in early adolescence when emotional support from peers and social comparisons become more salient.

The purpose of this investigation was to examine the influence of affiliation motivation on the strength of the relationship between social anxiety and drinking among early adolescents. We hypothesized that social anxiety's impact on drinking initiation and drinking intensity would be moderated by both the need for affiliation and perceived norms of peer drinking, such that lifetime and current drinking patterns would be higher among individuals high on all three factors. Given that sex differences are accentuated with the onset of puberty and common when examining alcohol initiation data (Flory et al., 2004; Wiesner et al., 2007) as well as sex differences in the relations between social anxiety and alcohol use disorders (Buckner and Turner, 2009), we opted to investigate the interrelations of sex, social anxiety, affiliation, and perceived peer drinking in relation to drinking behavior. Theoretical models and data suggest that the internalizing path to alcohol consumption is more prevalent in women. As such, we expected these relations to be most prevalent in girls. Given proposed associations between social anxiety at the clinical level and alcohol use (Buckner and Turner, 2009; Tomlinson et al., 2006), supplemental analyses examined the relation between more severe forms of self-reported social anxiety and drinking status.

Method

Participants

Students ($N = 1,571$) from four middle schools in the greater San Diego County, CA, area were asked to complete the California Healthy Kids Survey. Two versions were used in 2002; these data were collected from a random selection

TABLE 1. Sample characteristics by sex ($N = 1,533$)

Variable	Girls ($n = 738$) M (SD) or %	Boys ($n = 782$) M (SD) or %
Age, in years	13.0 (0.8)	13.1 (0.8)
Grade		
Seventh	53.5%	53.1%
Eighth	46.5%	46.9%
Race		
White	69.3%	69.3%
Hispanic	14.3%	12.0%
Asian American	13.3%	14.1%
African American	1.6%	2.8%
Multiracial	15.8%	13.8%
Alcohol use		
Lifetime drinkers	32.3%	39.6%**
Current drinkers	24.0%	29.7%*
Heavy episodic drinkers	12.1%	11.8%
Average drinks/episode	0.8 (2.2)	1.0 (2.4)*
Maximum drinks/episode	1.1 (2.7)	1.3 (3.0)
Alcohol-related problems	2.0 (4.0)	2.2 (4.7)
Peer drinking	1.8 (1.0)	1.8 (1.1)
Anxiety		
Social anxiety score	2.2 (0.7)	2.1 (0.8)*
Clinical social anxiety	16.8%	18.2%
Affiliation need	3.0 (0.9)	2.6 (1.0)***

Notes: Percentages are based on available data per group. Clinical social anxiety: Exceeding ≥ 50 cutoff on the Social Anxiety Scale for Adolescents-Revised.

* $p < .05$; ** $p < .01$; *** $p < .001$.

of students using Form B, which included the variables of interest here. Thirty-eight respondents were dropped from analyses for missing data on the outcomes variables of interest (see *Analytic strategy* below), resulting in a final sample of 1,533. Youths who were dropped from the analyses did not differ from the final sample on age, sex, grade, being Latino/a, levels of social anxiety, or need for affiliation. However, youths differed on race and peer drinking. Youths not included in the analyses were more likely to be non-White, $\chi^2(1) = 10.40$, $p = .001$, and endorsed greater alcohol use among their peers, $t(1514) = -2.51$, $p = .006$. Characteristics of the final sample are provided in Table 1.

Measures

Alcohol use. Categorical measures of lifetime drinking ("During your LIFE, how many times have you had at least one drink of alcohol? [regular size can/bottle of beer or wine cooler, glass of wine, shot of liquor, etc.]") and past 30-day drinking ("During the past 30 days, how many times have you had at least one drink of alcohol? [0 to 20+ times/mo.]") were dichotomized in this investigation because of nonnormality. Average drinks per occasion ("When you drank alcohol during the PAST MONTH [30 days], about how many drinks did you have in one day? [0 to 12 drinks/occasion]"), heavy episodic drinking ("...how many times did you have 5 or more drinks at one time? [0 to 12 times/mo.]"), and maximum drinks per occasion ("...what is the most drinks you had on one day? [0 to 12 times/mo.]") were continuous

measures. Students were also asked if they had experienced any one of a list of problems as a result of their alcohol use; these were summed to form a composite score. These items were derived from the California Healthy Kids Survey and have been used successfully in past investigations with this cohort (Anderson and Brown, in press).

Demographics. Respondents completing the survey were asked to provide information about age, sex, race, and ethnicity (Latino/a: yes/no). Although there was some racial diversity among participants, many respondents indicated they were multiracial. This leads to challenges in examining multiple levels of this variable. As such, a dichotomous (White/non-White) variable was used as a proxy for race in the subsequent analyses.

Interpersonal Orientation Scale (IOS). The IOS is a 26-item self-report measure with four subscales evaluating key dimensions of affiliation motivation: positive stimulation, emotional support, attention, and social comparison (Hill, 1987). The IOS was modified to include 11 items assessing emotional support (e.g., "The best way to feel better when things go bad is to be with other people") and social comparison (e.g., "I like to do things with other people and not by myself so that I can find out how well I am doing") using a 5-point Likert scale (1 = *not true*, 2 = *a little true*, 3 = *kind of true*, 4 = *mostly true*, 5 = *very true*). Six items evaluated emotional support, and five items evaluated social comparison. The original form of the IOS was found to correlate with other measures of personality, including the Sociability Scale and the Self-Monitoring Scale, suggesting strong convergent validity (Hill, 1987). The modified version used in this investigation demonstrated high levels of internal consistency ($\alpha = .91$).

Perceived peer drinking. A single-item measure from the California Healthy Kids Survey asked, "How many of your friends would you estimate drink alcoholic beverages?" rated on a 5-point scale from 1 = *none* to 5 = *all*.

Social Anxiety Scale for Adolescents-Revised (SAS-A). The SAS-A (La Greca and Lopez, 1998) has 22 items—18 anxiety related and 4 filler—assessing social preferences and activities. Students responded as to how true each statement was for them on a scale from 1 = *definitely not true* to 5 = *definitely true*. Three factors have been identified in past research: (a) fear of negative evaluation, (b) social avoidance and distress specific to new situations, and (c) generalized social avoidance and distress (Inderbitzen-Nolan and Walters, 2000; La Greca and Lopez, 1998). The SAS-A has demonstrated satisfactory reliability and validity in other samples (Inderbitzen-Nolan and Walters, 2000). Cronbach's α in this sample was .89.

Procedure

To obtain parental consent, consent forms were posted by certified mail to all students' homes. Parents were informed

that completion of the survey was voluntary and were given the opportunity to notify the school if they did not want their child to participate. Students provided assent at the time of survey administration. Parents who did not wish their children to participate could notify the school verbally or in writing (0.5%). Only youths with both parental consent and child assent were included in the study. The participating school districts and the University of California, San Diego, Institutional Review Board approved all procedures.

Analytic strategy

In the first stage of data analysis, chi-squares and analyses of variance were conducted on all available data. Thirty-eight cases were missing data on at least one independent variable and were considered missing completely at random. As in previous investigations (Anderson et al., 2007, 2008), multiple imputation was used in Stata 11.0 (StataCorp LP, College Station, TX) to compensate for patterns of missing data within the predictor variables (Schafer and Graham, 2002). Each missing value was replaced by a set of $m > 1$ plausible values to generate an m complete data set, and each estimate was combined to provide parameter estimates and standard errors in the regressions (Sinharey et al., 2001). Using variables associated with drinking outcomes in this sample (e.g.,

demographics, social anxiety, social variables), 35 data sets were generated for multiple imputation using chained equations (van Buuren et al., 1999).

Given the potential impact of school-level variables on alcohol use, the influence of school placement was examined first. Overall, schools differed as a function of the proportion of lifetime drinkers, $\chi^2(3) = 28.35$, $p < .0001$; current drinkers, $\chi^2(3) = 21.98$, $p < .0001$; average drinks per episode, $F(3, 1531) = 6.63$, $p < .001$; maximum drinks per episode, $F(3, 1531) = 6.28$, $p < .001$; and heavy episodic drinking, $F(3, 1531) = 5.10$, $p < .01$. As such, all regressions were conducted using hierarchical linear modeling (HLM). The random-effects parameter within the models—middle school—did not significantly influence model estimation for intensity of current use measures but did significantly affect the estimation of lifetime and current drinking status. At the time of this work, multiple imputation with HLM in logistic models was not supported in Stata 11.0, and questions were raised regarding the stability of such models in consultation with Stata analysts. As such, when HLM models were supported when modeling lifetime and current alcohol use status, no correction for missingness was used in those analyses. Standard regression equations were evaluated using multiple imputation for all current use analyses.

Because we were interested in the interaction of social

FIGURE 1. The three-way interaction of need for affiliation, perceived peer drinking, and social anxiety on average drinks per episode (past 30 days). Hi PD = high peer drinking; Lo PD = low peer drinking; Hi AF = high need for affiliation; Lo AF = low need for affiliation.

TABLE 2. Prediction of lifetime drinking using hierarchical linear modeling ($n = 1,444$)

Variable	<i>B</i>	<i>SE</i>	<i>p</i>
Age	0.10	0.11	.37
Sex	0.35	0.13	.01
Grade	0.31	0.17	.07
White	0.18	0.14	.19
Hispanic	0.58	0.20	.003
Social anxiety (SA)	0.06	0.14	.67
Need for affiliation (AF)	-0.03	0.11	.79
Peer drinking (PD)	1.03	0.11	.00
SA $\times$ AF	-0.23	0.15	.13
SA $\times$ PD	-0.22	0.14	.12
AF $\times$ PD	0.07	0.11	.52
Sex $\times$ SA	-0.05	0.19	.79
Sex $\times$ AF	0.02	0.14	.91
Sex $\times$ PD	-0.06	0.15	.67
Sex $\times$ SA $\times$ AF	0.40	0.19	.03
Sex $\times$ SA $\times$ PD	-0.02	0.17	.92
Sex $\times$ AF $\times$ PD	0.04	0.15	.77
SA $\times$ AF $\times$ PD	0.13	0.14	.35
Sex $\times$ SA $\times$ AF $\times$ PD	-0.08	0.16	.62

Note: Significant parameters are highlighted in **bold** ($p < .05$).

anxiety, need for affiliation, and perceived peer drinking, all models included the same set of predictors: demographics (sex, age, grade, race, ethnicity), social anxiety (SA), need for affiliation (AF), perceived peer drinking (PD), all two-way interactions (SA $\times$ AF; SA $\times$ PD; AF $\times$ PD; Sex $\times$ SA; Sex $\times$ AF; Sex $\times$ PD), the three-way interactions (SA $\times$ AF $\times$ PD; Sex $\times$ SA $\times$ AF; Sex $\times$ AF $\times$ PD; Sex $\times$ SA $\times$ PD), and the four-way interaction (Sex $\times$ SA $\times$ AF $\times$ PD). All variables included within the interaction terms were centered before inclusion within the interaction term (Aiken and West, 1991). When significant interactions were found, they were probed using the techniques described by Dawson and Richter (2004) using software developed by the University of California, Los Angeles (UCLA), Academic Technology Services (Stata, n.d.). Visual representations of these interactions, as in Figure 1, depict one standard deviation above and below the mean on the moderator(s) of interest. A Holm (1979) correction was used to correct p values for multiple comparisons when appropriate.

Results

Table 1 provides information regarding the demographic characteristics of this sample. HLM indicated a significant impact of school placement on the prediction of lifetime drinking in this sample (*likelihood ratio* [LR] = 7.40, $p = .003$). Being male, being Latino/a, having higher perceived peer drinking, and the interaction of sex, social anxiety, and affiliation were significantly associated with having consumed alcohol within one's lifetime, Wald $\chi^2(19) = 239.14$, $p < .0001$ (Table 2). When probing the interaction, there were no significant differences found in pairwise comparisons of simple slopes. The overall regression model predicting current drinking status (i.e., having consumed an alcoholic

beverage within the past 30 days) was significant for both random effects ($LR = 3.65$, $p = .03$) and fixed effects, Wald $\chi^2(19) = 255.44$, $p < .0001$. School placement significantly affected being a current drinker ($p < .05$). Being male ($B = 0.33$, $SE = .15$, $p < .05$), in the eighth grade ($B = 0.41$, $SE = .18$, $p < .05$), and perceived peer drinking ($B = 1.15$, $SE = .11$, $p < .001$) emerged as significant predictors of being a current drinker.

Drinking intensity was evaluated for youths who consumed alcohol in the past month. For average drinks per episode and heavy episodic drinking, the three-way interaction of Social Anxiety $\times$ Affiliation Need $\times$ Peer Drinking emerged as a significant predictor (Table 3). The overall model for average drinks per occasion accounted for an average of 30% of the variance across imputed sets (mean $p < .0001$). On the basis of post hoc probing, the three-way interaction for typical consumption per occasion was driven by significant differences between individuals with high perceived peer drinking/high affiliation need and those with high peer drinking/low affiliation need ($t = 2.79$, $p < .01$; Figure 1). This interaction suggests that with increasing levels of social anxiety, perceiving high levels of peer use in conjunction with high levels of affiliation need leads to higher levels of alcohol use. Although there was a trend for the difference between the high peer drinking/low affiliation need and low peer drinking/low affiliation need groups ($t = -1.99$, $p = .05$), the difference did not exceed corrected p value cutoffs. The two-way interaction of Sex $\times$ Perceived Peer Drinking was significant, suggesting that peer drinking had a greater impact on the average amount of alcohol girls consumed than boys.

Although a similar pattern emerged for the three-way interaction of social anxiety, affiliation, and perceived peer drinking on heavy episodic drinking (mean $R^2 = .34$, mean $p < .0001$; Table 3) post hoc evaluation of this interaction did not identify significant pairwise differences between the simple slopes. Specific to heavy episodic drinking, there was a significant three-way interaction of sex, social anxiety, and peer drinking. Probing the interaction suggested that high social anxiety in the context of high peer drinking related to greater heavy episodic drinking for boys compared with low social anxiety in the context of low peer drinking. A similar but less pronounced effect was seen for girls. However, this comparison did not exceed Holm-corrected p values ($t = 2.57$, $p = .01$). Additionally, there was a trend for differences between individuals with high social anxiety in the context of high perceived peer drinking compared with those with low social anxiety and high perceived peer drinking, such that high social anxiety in the context of greater perceived peer drinking was associated with greater heavy episodic drinking for boys, but the opposite pattern was found for girls ($t = 2.10$, $p = .04$). Only age and peer drinking predicted maximum drinks per occasion in this sample (mean $R^2 = .33$, mean $p < .0001$).

TABLE 3. Prediction of drinking intensity for current drinkers

Variable	Average drinks per episode (30 days)			Heavy episodic drinking (30 days)		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Age	0.55	0.26	.03	0.43	0.26	.10
Sex	-0.24	0.41	.57	-0.48	0.42	.26
Grade	0.10	0.41	.81	0.25	0.42	.55
White	-0.60	0.35	.09	-0.65	0.36	.07
Hispanic	0.54	0.45	.23	0.41	0.45	.37
Social anxiety (SA)	-0.03	0.40	.94	-0.10	0.42	.80
Need for affiliation (AF)	-0.48	0.29	.10	-0.42	0.30	.17
Peer drinking (PD)	0.85	0.21	.00	0.99	0.22	.00
SA × AF	0.24	0.35	.50	-0.03	0.37	.94
SA × PD	-0.32	0.27	.24	-0.38	0.29	.20
AF × PD	0.17	0.19	.39	0.39	0.21	.06
Sex × SA	-0.28	0.58	.63	-0.25	0.60	.67
Sex × AF	0.45	0.40	.26	0.34	0.42	.42
Sex × PD	0.54	0.28	.05	0.49	0.29	.10
Sex × SA × AF	-0.18	0.45	.68	0.09	0.47	.85
Sex × SA × PD	0.62	0.34	.07	0.77	0.37	.04
Sex × AF × PD	-0.23	0.24	.35	-0.40	0.26	.13
SA × AF × PD	0.39	0.18	.03	0.38	0.19	.05
Sex × SA × AF × PD	-0.39	0.21	.07	-0.34	0.23	.14

Notes: Estimates were provided using regression in multiple imputation integrating 35 data sets (minimum observations per set = 418). Significant parameters are highlighted in **bold** ($p < .05$).

We also tested whether there was a difference in the proportion of youths exceeding clinical cutoffs for social anxiety by drinking status. There was a trend for youths with a clinically significant level of social anxiety to be less likely to be lifetime drinkers, $\chi^2(1) = 3.55$, $p = .06$. Interestingly, youths with clinical-level social anxiety trended toward being more likely to be current drinkers, $\chi^2(1) = 3.31$, $p = .07$. These findings suggest that although social anxiety might inhibit drinking initiation, once drinking has begun, these youths were more likely to maintain their drinking behavior. However, neither finding reached statistical significance.

Discussion

Consistent with expectations, we found a synergistic influence of social anxiety, need for affiliation, and perceived peer drinking in the prediction of drinking intensity, but these findings did not vary as a function of sex. Although this model did not hold for the initiation of drinking or current drinking status, the metrics commonly associated with greater alcohol engagement (i.e., average drinks per occasion and heavy episodic drinking) suggest that being more socially anxious can confer alcohol consumption risk when the need for peer affiliation and perceived peer drinking is high. This was in contrast to youths with higher social anxiety and greater perceived peer drinking but low affiliation needs. This finding might help explain the seeming contradiction in the previous literature, whereby social anxiety seems to bestow greater risks for alcohol use in some samples but protects from engagement in others (Buckner and Turner, 2009; Maggs et al., 2008; Morris et

al., 2005). One interpretation of these findings is that having a greater need for affiliation with others, often focused on peers in adolescence, places youths with greater social anxiety at risk for drinking when peer alcohol consumption is higher. Believing that peers drink heavily is insufficient to encourage more socially anxious youths to drink when they endorse less orientation to others. This model seemingly supports a psychosocial mechanism underlying the link between social anxiety and drinking (Buckner and Turner, 2009). However, this pattern was specific to youths who were already drinking.

A number of sex differences were identified in this sample of middle school students. Having higher social anxiety coupled with a greater need for affiliation increased the odds of being a lifetime drinker, with a tendency for this relation to be greater in boys than girls. Heavy episodic drinking was associated with the interplay of sex, social anxiety, and peer drinking. Findings suggest that high social anxiety in the context of greater perceived drinking by peers was associated with increased heavy episodic drinking for boys to a greater extent than girls. Perceived peer drinking seemingly had a greater impact on typical drinks per occasion for girls than boys. It is unknown whether these suggestive differences between boys and girls are the result of developmentally specific factors of early adolescence or this particular sample of youths.

Sex- and gender-based differences have been examined in the prevalence rates, symptom presentations, and etiology of anxiety disorders (Barlow et al., 2004; Inderbitzen-Nolan and Walters, 2000). Although biological factors (e.g., alcohol metabolism rates, body mass differences) certainly

influence alcohol consumption and associated problems, gender differences in cognitions associated with drinking (i.e., alcohol expectancies, motives) and social mores about alcohol consumption have been shown to influence use for girls and women (Stewart et al., 2009). Theoretical models (Cloninger, 1987) and empirical findings (Buckner and Turner, 2009) suggest that the internalizing path to alcohol use disorders may be more prevalent among women and be related to later onset alcohol use disorders. Research on the developmental emergence of concomitant disorders suggests that anxiety disorders most commonly precede alcohol and other drug use disorders (Merikangas et al., 1998). Our findings suggest that the preliminary steps down this path may occur earlier than expected and be relevant to both boys and girls. It is unknown whether we might see greater differentiation between boys and girls as adolescents progress into emerging adulthood. Although this investigation does not speak to alcohol use disorders, research strongly suggests that the earlier alcohol use begins, the more likely youths will evidence alcohol use disorders later in development (Dawson et al., 2007; McGue et al., 2001).

A developmental progression has been identified for social influence (Brown et al., 2008a; McIntosh et al., 2006) and resistance to such influence across time (Steinberg and Monahan, 2007). Although we focused on perceived peer drinking, which is commonly associated with consumption in the alcohol literature (McIntosh et al., 2006), real-time assessment of peer behavior and interactions might provide a different view of how social anxiety and the need for peer affiliation operate socially. Research suggests that susceptibility to peer influence, as assessed in youth dyads, predicts response to future negative peer pressure as well as issues with problematic behavior, including depression, across time (Allen et al., 2006). Although peer pressure and contagion are often the popular conception of how peers influence alcohol and drug use decision making, the potential impact of cognitive factors and homophily (i.e., selection of peers on the basis of their alcohol use behavior) should also be considered (Brown et al., 2008a). Youths with higher levels of social anxiety may be socially awkward and experience rejection from their peers. As such, children who are neglected and rejected by their peers report greater feelings of social anxiety (La Greca and Lopez, 1998; La Greca and Stone, 1993). These youths might find greater acceptance in their schools among outgroup members who have greater acceptance of deviant behaviors such as early alcohol and drug use (Connell et al., 2006). Alternatively, peer groups can protect against the onset of alcohol and other drug use if they are nonusers (Anderson et al., 2007) and also protect against a return to use should youths seek to abstain after using (Brown et al., 2008b). Peer influence is not necessarily negative (Allen and Antonishak, 2008), such that peers can also promote pro-social, pro-school, and antidrug messages as well.

We did not examine problematic alcohol use *per se* in this sample. Attempts were made to model alcohol-related problems, but models were unstable as a result of few youths reporting problems. However, some young adolescents in this sample, who were currently drinking, did experience alcohol-related problems. Longitudinal work is needed to observe the progression of social anxiety, affiliation orientation, peer influences, and drinking behavior across adolescent development to better understand the mechanisms underlying these relations.

This study has a number of strengths. Most notably, we were able to sample young adolescents from a number of schools in a large metropolitan area. This resulted in a relatively diverse sample across race, ethnicity, and socio-economics (as indexed by school placement). High levels of student participation allowed for adequate power to examine a complex set of relations among constructs of interest. As always, these strengths are tempered by methodological constraints. Given the manner in which the survey assessed race (i.e., allowing students to report multiple races and ethnicities in a single item), we had less ability to differentiate racial differences. However, it is equally possible that this measure better represents the racial diversity both within and among students in San Diego County. Although the survey methodology allowed for high levels of student participation, it did not allow for us to use other methods for assessing peer influences and affiliation need, such as peer nominations, behavioral observations, event sampling, or interviews to diagnose social anxiety disorder (Allen et al., 2006; Brown et al., 2008b). As always, despite relatively strong reliability and validity information for self-reported alcohol use among youths when confidentiality is assured (Ciesla et al., 1999; Frissell et al., 2004), we must always take self-report data at face value and understand its limitations. Although few students were excluded for missing outcome data, there were indications that these youths differed from included youths in terms of race and perceived peer use, which are often associated with alcohol use. In addition, we were unable to control for other factors associated with problematic drinking in youths, such as depression and conduct problems. Finally, because of an inability to account for missingness in HLM logit models, we were forced to use only available data in one analysis of lifetime drinking.

Our findings suggest that internalizing pathways, specifically for social anxiety, may have an impact on the use of alcohol in early adolescence. The means whereby social anxiety influences more intense alcohol use is jointly moderated by the need for social affiliation and perceptions of peer alcohol use. In addition, sex and gender differences should be explicitly examined when considering these factors for youths, because integrated analyses might mask the important developmental differences between boys and girls. Prevention programs should be aware that the externalizing pathway might best explain alcohol use for some youths but

that the risks associated with anxiety play an important role for young adolescents.

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